DOES ONLINE CUSTOMER RATINGS IMPACT ON REVENUE GROWTH RATE AND PROFITABILITY GROWTH RATE OF HOTELS IN INDIA?

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Abstract

In this research paper, the non-financial metric that is online customer ratings and its impact on the financial metrics such as revenue growth and profitability of hotels in India measured in terms of AAGR (Average Annual Growth Rate) and CAGR (Compounded Annual Growth rate) of Revenue, Gross profit, Net profit. The data is collected using Tripadvisor and Yahoo Finance for Customer ratings and financial data respectively. Statistical tools like summary statistics and Simple Linear Regression are employed to analyse the data. The key findings of this research suggest that there is no significant relationship between the customer ratings and Revenue growth and profitability growth of hotels in India. It is also observed from the summary statistics of customer rating data that there might be bias in rating the hotels.

Keywords:

Customer Ratings, Revenue Growth, Profitability Growth, AAGR, CAGR

1. INTRODUCTION

The hotel industry has witnessed a great transformation after COVID 19 which is a testing period for travel, tours and the hotel industry due to the lockdown imposed to contain the spread of disease. The industry has a strong user base, potential for growth in revenue and Increased FDI inflows have paved the way for the flourishing hotel industry in India.

Profitability and revenue are important determinants of the success of an organization [1]. The profitability of commercial banks is largely influenced by both internal factors such as Firm size, Capital adequacy and deposits as well as macro factors like GDP and inflation rates.

However, the question is about "Do the online customer ratings have an impact on the revenue and profitability of hotels in India?" needs to be answered. If the customer ratings are having a significant impact, then the hotel operators need to manage their customer reviews to increase their sales and profit [2]. In Italian hotels, the research study shows that the hotel's online visibility which is Customer ratings and reviews does have a positive impact on revenue. But it negatively affects the gross profit margin.

In this research paper, the AAGR (Average Annual Growth rate) and CAGR (Compounded Annual Growth rate) of Revenue, Gross profit margin and net profit margin as the financial metrics used to find the relationship existence with customer ratings which is a new approach.

1.1 OBJECTIVES OF STUDY

- To study the relationship between customer ratings and its impact on 3-year AAGR and CAGR Revenue of hotels in India

- To find the relationship between customer ratings on 3-year AAGR and CAGR Gross profit of hotels in India

- To study the relationship between customer ratings and its impact on 3-year AAGR and CAGR Net Profit of hotels in India

1.2 REVIEW OF LITERATURE

The previous research studies were conducted on various independent variables like Capital ratio, size of the firm, Capital adequacy, Operating efficiency, liquidity, non-interest income, total loans to total assets and similar internal factors and GDP, inflation, financial crisis and alike external factors that are affecting the dependent variables like Return on asset, Return on Equity, Net profit margin and Net interest margin.

Adam [3] In Erbil bank, the study conducted and the result confirms that the ROA (Return on Asset) and ROE availed (Return on equity) are influenced by bank size and loans, whereas bank size does not affect the ROA and ROE. Pervez and Ali [4] External factors like Basel norms, GDP, and Financial crisis do have a profound impact on the profitability of the firm. So, it is clear that internal factors and external factors also have a significant impact on the profitability of a firm.

Chowdhury and Rasid [5] In the banking sector, profitability is affected by Operating efficiency, Capital adequacy, Credit risk and liquid risk of the bank. Le et al. [6] Most of the research on profitability analysis was made in the banking sector and some other factors were also explored such as the number of cards issued, number of ATM presence, and POS (Point of Sale) presence are the factors does have a significant impact on the profitability of banks.

Allamy et al. [7] The profitability of commercial banks were impacted by major internal factors like Company size, Capital adequacy and total deposits. So far the research was based on the internal financial factors and external economic factors affecting the profitability of firms. However, there is not much research done on the relationship between non-financial metrics such as customer rating affecting the profitability of the firms.

Naumzik et al. [8] a study conducted using a machine learning prediction model that is Hidden Markov model HMM reveals that customer ratings are an early sign of business failure, but not an immediate impact. So the customer rating acts as a leading indicator to predict whether the business will succeed or fail.

Li et al. [9] that user-generated customer ratings do not influence customer satisfaction. But factors like cleanliness, location, and room services influence indirectly by having an impact on customer satisfaction and in turn results in customer ratings and reviews online.

Lo et al. [10] Now the question arises whether the user-generated content of reviews and ratings and customer online is reliable and free of bias or not. It is found that the higher

credibility scores are given to the critical ratings provided by the users rather than the positive ratings. It is clear that the customer ratings and review are not free of bias and manipulation.

2. RESEARCH METHODOLOGY

2.1 DATA COLLECTION

The Revenue, Gross Profit, Net profit, Total asset and common stock equity data were collected from the Yahoo Finance website which contains all NSE and BSE listed company's financial data and the customer rating were collected from Tripadvisor website which contains the customer ratings on hotels in India. So, the publically available data were collected for the analysis.

2.2 SAMPLE DESIGN

The sample selected for this study is from hotel industries in India. There are around 29 hotels were taken as samples for this study which are listed in National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). In this study, purposive sampling method is employed which is a non-probability sampling technique, because the samples are not randomised and selected based on criteria.

2.3 VARIABLES AND MODEL FOR THE STUDY

In this study, the customer rating is an independent variable which is used to find a relationship with the dependent variables like revenue growth and profitability growth of hotels in India. A simple regression analysis is used to test the relationship between the independent and dependent variable. The models used for the analysis were listed as follows.

$$\text{3 Year AAGR Revenue}_t = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (1)$$

$$\text{3 Year CAGR Revenue}_t = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (2)$$

$$\text{3 Year AAGR Gross profit margin} = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (3)$$

$$\text{3 Year CAGR Gross profit margin} = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (4)$$

$$\text{3 Year AAGR Net profit margin} = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (5)$$

$$\text{3 Year CAGR Net profit margin} = \alpha t + \beta \text{ Customer ratings}_t + \varepsilon \quad (6)$$

2.4 RESEARCH HYPOTHESIS

- H1: There is a significant relationship between the hotel's customer rating and the 3-year AAGR Revenue of hotels in India.
- H2: There is a significant impact of hotel's customer rating and 3-year CAGR Revenue of hotels in India.
- H3: There is a significant impact on the hotel's customer rating and 3-year AAGR Gross Profit margin of hotels in India.
- H4: There is a significant relationship between the hotel's customer rating and the 3-year CAGR Gross Profit margin of hotels in India.
- H5: There is a significant relationship between the hotel's customer rating and the 3-year AAGR Net profit margin of hotels in India.

- H6: There is a significant relationship between the hotel's customer rating and the 3-year CAGR Net profit margin of hotels in India.

2.5 FORMULAS AND STATISTICAL TOOLS USED FOR ANALYSIS

Firstly, the gross profit margin is calculated using the formula Gross profit margin = (Gross profit/Total revenue) *100, and then the Annual growth rate for Gross profit margin is calculated using the formula, AGR (Annual growth rate) = [(Current year – Previous year)/Previous year] *100.

AGR is used to calculate AAGR (Average Annual growth rate) and the formula is given as AAGR = [AGR1 +AGR2 + …. AGRn] / n.

CAGR (Compounded Annual growth rate) can be calculated by the formula CAGR = (Ending year/Beginning year) ^ (1/n) - 1

The same step is applied for Net profit margin calculation as, Net profit margin = (Net Profit/Total Revenue) *100, and then AGR, AAGR and CAGR of net profit margin were calculated using their respective formulas. Statistical tools like descriptive summary statistics and simple regression analysis were used for the analysis of data.

3. DATA ANALYSIS AND INTERPRETATIONS

Table.1. Customer ratings, 3 Year AAGR Revenue and 3-year CAGR Revenue

Sl. No	Hotels in India	Customer rating (Out of 5)	3 Year AAGR Revenue	3 Year CAGR Revenue
1	Indian Hotels company Limited	4.50	56.29	32.38
2	EIH	4.00	43.42	25.39
3	Chalet hotels	3.50	73.91	40.79
4	Lemon Tree	4.50	69.42	38.08
5	Juniper Hotels	4.00	71.89	39.52
6	Mahindra Holidays	4.00	19.04	12.22
7	Indian Tourism Development Corporation	3.50	36.01	21.81
8	Apeejay Park	5.00	56.11	31.07
9	Oriental Hotels	4.00	39.74	21.46
10	Taj GVK hotels	4.00	37.64	21.57
11	Benares Hotels	4.50	58.22	34.24
12	HLV	5.00	76.00	39.72
13	UP Hotels	4.90	48.46	27.47
14	Royal Orchid	4.60	50.83	28.45
15	Viceroy Hotels	4.30	65.55	35.68
16	Mac Charles	4.10	3.06	2.03
17	Speciality restaurants	4.60	28.09	16.96
18	Kamat Hotels	3.10	55.87	29.07
19	Asian Hotels	3.30	56.25	31.69
20	Sinclair Hotel	4.30	40.62	22.60

21	Sayaji Hotels	4.80	-16.16	-11.85
22	The Byke Hospitality	3.60	-2.03	-3.49
23	Graviss Hospitality	3.60	9.07	3.85
24	Phoenix Town	4.00	34.55	20.06
25	Country Club	4.20	-2.76	-2.70
26	Savera India	4.50	54.89	31.20
27	Eco Hotels	3.70	-50.00	2.78
28	Jungle Camps	4.20	56.26	34.63
29	Royal Manor	3.90	34.13	19.79

Table.2. 3-year AAGR Gross Profit, 3-year CAGR Gross profit, 3 Year AAGR Net Profit and 3 Year CAGR Net profit

Sl. No	Hotels in India	3-year AAGR Gross Profit	3-year CAGR Gross Profit	3 Year AAGR Net Profit	3 Year CAGR Net Profit
1	Indian Hotels company Limited	16.43	10.57	-153.99	-229.88
2	EIH	4.32	2.81	100.15	47.22
3	Chalet hotels	13.66	8.59	-90.19	-206.93
4	Lemon Tree	7.29	4.59	-76.33	-186.41
5	Juniper Hotels	9.17	5.50	-745.57	-135.98
6	Mahindra Holidays	4.07	2.67	12.52	6.59
7	Indian Tourism Development Corporation	12.19	7.25	370.11	109.31
8	Apeejay Park	5.20	3.38	-79.51	-202.69
9	Oriental Hotels	10.23	6.24	-128.59	-211.01
10	Taj GVK hotels	5.12	3.32	182.36	61.10
11	Benares Hotels	13.90	8.98	82.04	46.79
12	HLV	14.74	9.49	31.35	-158.99
13	UP Hotels	5.24	3.34	54.72	31.70
14	Royal Orchid	2.51	1.49	-11.63	-7.98
15	Viceroy Hotels	1,200.85	194.31	-56.94	-90.58
16	Mac Charles	-2.09	-1.40	-156.42	-182.46
17	Speciality restaurants	-3.41	-2.30	314.06	31.06
18	Kamat Hotels	2.63	1.50	-423.67	-197.26
19	Asian Hotels	29.96	11.17	-38.40	-32.54
20	Sinclair Hotel	1.35	0.87	55.19	16.08
21	Sayaji Hotels	4.45	2.91	-3.66	-14.13
22	The Byke Hospitality	35.07	17.49	61.04	-178.83
23	Graviss Hospitality	21.34	13.76	-103.17	-174.53
24	Phoenix Town	-0.38	-0.50	13,575.30	634.31
25	Country Club	-0.67	-0.62	-136.36	-50.59
26	Savera India	20.07	11.02	-468.55	-278.46
27	Eco Hotels	0.00	-214.63	0.00	131.36
28	Jungle Camps	0.00	0.00	169.88	26.41
29	Royal Manor	6.34	4.11	78.99	38.53

Table.3. Regression analysis of Customer rating with AAGR and CAGR of Revenue, Gross profit and Net profit

Hypo-thesis	Regression Analysis	Customer Rating (R²)	Significance Value	Significant/ Insignificant
H1	3 Year AAGR Revenue	0.033	0.341	Insignificant
H2	3 Year CAGR Revenue	0.020	0.459	Insignificant
H3	3 Year AAGR Gross Profit	0.002	0.805	Insignificant
H4	3 Year CAGR Gross Profit	0.020	0.456	Insignificant
H5	3 Year AAGR Net Profit	0.0021	0.810	Insignificant
H6	3 Year CAGR Net Profit	0.003	0.744	Insignificant

It is interpreted from the above simple regression analysis that there is no significant relationship exists between customer rating and AAGR and CAGR of financial metrics like revenue, Gross profit margin, Net profit margin.

Table.4. Grouped Customer ratings with frequency Distribution

Customer ratings	Frequency Distribution
3-3.5	2
3.5-4	6
4-4.5	11
4.5-5	10
Grand Total	29

Table.5. Summary Statistics of Customer ratings

Customer Ratings	
Mean	4.144827586
Standard Error	0.093190071
Median	4.1
Mode	4
Standard Deviation	0.501843891
Sample Variance	0.251847291
Kurtosis	-0.560249501
Skewness	-0.117138245
Range	1.9
Minimum	3.1
Maximum	5
Sum	120.2
Count	29

It is interpreted from Table.4 and Table.5 of the summary statistics of Customer rating show that the minimum rating starts from 3.1 to 5 with a mean and median is 4.1 and mode is 4. The Kurtosis is -0.560 which shows that it is platykurtic Kurtosis and the Skewness is -0.1171 which shows that the data is negatively skewed.
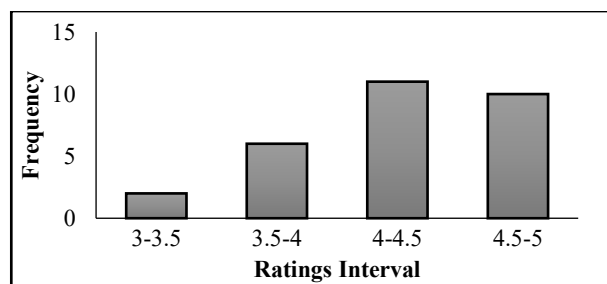
Fig.1. Bar chart showing the Customer ratings frequency distribution

4. KEY FINDINGS AND DISCUSSIONS

It is found from the above analysis that customer rating does not have a significant relationship with Revenue growth in terms of AAGR and CAGR. It also holds true for the profitability metrics like AAGR and CAGR of Gross profit, Net Profit, ROA and ROE. There are many previous studies are showing that there is a relationship exists between customer rating and revenue growth and profitability growth of the companies.

The results of this research paper are not consistent with most of the research done before in the direction of customer rating impact on revenue and profit margin growth rate. Abdullah, S., Van Cauwenberge, P., Vander Bauwhede, H., and O'Connor, P. (2023) [11] The research conducted to establish a relationship between ROA and Customer rating and reviews shows that Customer ratings do not influence or have an impact on the profitability of restaurants in Flanders. However, the sentiment score of customer reviews from TripAdvisor does have a positive influence on the profitability of restaurants.

Bigne, E., Ruiz, C., Perez-Cabañero, C. et al. (2023) [12] the influence of Sentiment analysis and star ratings on customer service experience in tourist destinations shows a positive relationship.

The study shows that there is no significant relationship exists between the customer rating and its impact on revenue growth and profit margin growth. It is also observed that this contradictory result might have arisen due to customer rating data which is platykurtic and negatively skewed and the range is very short is 1.9 with a minimum value of 3.1 and a maximum value of 5. It is also possible that the revenue growth rate and profit margin growth rate might not be truly influenced by customer ratings online.

Another possibility is that the Customer ratings are leading indicators and might not have an immediate effect on revenue and profit margin growth rate.

5. LIMITATIONS OF THIS STUDY

The main limitations of this study are listed as follows. Firstly, the research is conducted using three-year financial data for AAGR and CAGR calculations might not be sufficient enough data. Secondly, the average customer review might not reflect the ground reality, because there might be bias in online customer ratings and reviews. So, the longitudinal study on customer ratings' impact on revenue and profit growth is required to confirm the consistency of the result. Customer sentiment analysis or Net promoter Score can be used as a dependent variable instead of customer ratings.

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